fabric to form a wet web; dewatering the wet web to form a partially dewatered web; topically applying a glycol compound selected from a group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to the partially dewatered web having a fiber consistency of about 80% or less; and drying the partially dewatered web by passing heated air at a temperature of at least about 175°C through the web.

To satisfy prima facie anticipation, a reference must teach, expressly or inherently, each and every element required by claim 1 as interpreted by one of ordinary skill in the art.[1] Applicants submit that the invention defined in the claims is novel and patentable over Vinson et al.

Vinson et al. disclose a softening composition for absorbent tissues. The composition contains a softening active ingredient, a vehicle in which the softening active ingredient is dispersed and an electrolyte dissolved in the vehicle. The softening active ingredient is suitably a quaternary ammonium compound which is preferably accompanied by an appropriate plasticizer including, for example, glycerol and polyethylene glycol having a molecular weight of from about 200 to about 2000, with polyethylene glycol (PEG) having a molecular weight of from about 200 to about 600 being particularly preferred. The function of the plasticizer is to reduce the melting point and viscosity of the quaternary ammonium ingredient to aid in the synthesis (See col. 13, lines 19-42). The disclosed softening composition including a plasticizer may be applied to a "dry" tissue web, including "overdried" tissue webs, or to a "semi-dry" tissue web (See col. 4, lines 56-58). In a preferred embodiment, the softening composition is applied to a dried or overdried tissue web shortly after it is separated from the drying means and before it is wound onto a parent roll (See col. 5, lines 48-51; col. 18, lines 24-33; and Fig. 1). Alternatively, the softening composition may be applied to a semi-dry tissue web such as while the web is on the forming wire or Fourdrinier cloth, on a drying felt or fabric, or while the web is in contact with the Yankee dryer or other alternative drying means (See col. 5,

[1] *W.L. Gore & Associates v. Garlock*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (stating that "anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration"); M.P.E.P. § 2131.

lines 51-55). Vinson et al. define a **"dry"** or **"overdried"** tissue web as a web dried to a moisture content at or below its equilibrium moisture content at standard conditions of 23°C and 50% relative humidity (See col. 4, lines 59-63; and col. 5, lines 22-26). A **"semi-dry"** tissue web includes a web with a moisture content exceeding its equilibrium moisture content (See col. 4, lines 63-65). The equilibrium moisture content of a tissue web at standard conditions is said to be approximately 7% (See col. 5, lines 26-28). The tissue web of Vinson et al. may be dried or overdried using a Yankee dryer or by through-air drying (See col. 5, lines 28-35).

As stated in Amendment A filed on June 16, 2003 and again on February 18, 2004, and in the Letter to Patent and Trademark Office filed on July 12, 2004, Vinson et al. fail to disclose the requirement of drying the partially dewatered web of papermaking fibers by passing heated air **at a temperature of at least 175°C** through the web. While drying the tissue web by through-air drying is mentioned, the reference does not disclose any details as to how such a through-air drying step is conducted, including the temperature of the heated air passed through the web. The only drying temperatures disclosed by Vinson et al. are in Examples 1-3 and **are for a Yankee dryer.** A Yankee dryer is distinguished from through-air drying as it does not involve passing heated air through the web, but instead heats the web as it passes over a steam-heated cylinder.[2]

Vinson et al. also fail to disclose applying a polyhydroxy compound, such as glycerol and polyethylene glycol, to a partially dewatered web **having a fiber**

[2] Applicant notes that the examiner has failed to substantively address the argument that a Yankee dryer does not provide through-air drying of the web. In response to applicant's arguments, the Examiner states "[t]he web is then dried with passing heated air, the dryer operating temperature being 177°C (Vinson, col. 26, lines 1-3)" on page 2 of the Office action dated December 17, 2004. The same statement was contained in the prior Office action. However, the Office's reliance on Vinson et al. to disclose the "through-air drying" element of subject claim 1 is misplaced. Although the Yankee dryer described includes a drying hood that circulates hot air (see column 19, lines 12-14), the Yankee dryer cylinder does not allow air to pass through it (e.g., it is heated with steam contained inside the large cylinder at greater than atmospheric pressure) and the web to be dried is adhesively secured to the Yankee cylinder. The drying hood of the Yankee dryer may circulate hot air past the web, but the hot air **does not pass through** the web and the temperature of the hot air in the drying hood is not disclosed. Accordingly, the Yankee dryer described by Vinson et al. does not meet the element of "drying the partially dewatered web by passing heated air at a temperature of at least about 175°C through the web."

consistency of about 80% or less. Instead, as noted above, Vinson et al. prefer to apply the softening composition to a dry or overdried web defined as having a moisture content of 7% or less and **corresponding to a fiber consistency of 93% or greater.** In each of the Examples, the softening composition containing PEG 400 was applied to the web after the fiber consistency was increased to at least 96% on a Yankee dryer (See Example 1 at col. 21, line 64 to col. 22, line 12; Example 2 at col. 23, line 65 to col. 24, line 9; and Example 3 at col. 25, line 62 to col. 26, line 11). Furthermore, although Vinson et al. disclose that the softening composition may be applied to a semi-dry web, a semi-dry web is defined as having a moisture content in excess of 7% (i.e., its equilibrium moisture content at standard conditions) and **corresponding to a fiber consistency of up to 93%.** The remainder of the disclosure, including the working Examples, does not illustrate application of the softening composition to a semi-dry web, nor more importantly, application of the softening composition to a partially dewatered web of papermaking fibers having a fiber consistency of about 80% or less as required in claim 1.

Although, as noted above, Vinson et al. fail to disclose applying the softening composition to a partially dewatered web having a fiber consistency of about 80% or less as required by claim 1, the Office states on Page 2 of the Office action that it takes "official notice that it is well known in the art that the web consistency prior to the web drying is less than 80%." Regardless of whether this "official notice" is correct, it does not, and cannot, make up for the shortcoming of the Vinson et al. reference. The point is not that the web consistency prior to the web drying is less than 80 percent, but is that the glycol (or softening compound in combination with a plasticizer in Vinson et al.) is applied to the web having a fiber consistency of about 80% or less as required by claim 1. Even if the "official notice" is correct, it does not address anything regarding the addition of a compound as required by claim 1. Vinson et al. cannot be colorably said to remedy this shortcoming as, discussed in detail above and in prior submissions, they add their softening agents to fiber consistencies much higher that about 80% or less.

Moreover, claims 2-3, 8-9 and 12 are dependent on claim 1, incorporate all the elements of claim 1 and are not anticipated by Vinson et al. for the same reasons as claim 1.

B. Rejections under 35 U.S.C. §103

Claims 4, 5, 13-16 and 24

Reconsideration is respectfully requested of the rejection of claims 4, 5, 13-16 and 24 under 35 U.S.C. § 103(a) based on the disclosure of Vinson et al. in view of WO 01/18310 (Kohler et al.).

Independent claim 13 is directed to a process for manufacturing a cellulosic paper product and requires forming an aqueous suspension of papermaking fibers; depositing the aqueous suspension of papermaking fibers onto a sheet-forming fabric to form a wet web; dewatering the wet web to produce a partially dewatered web having a fiber consistency of about 80% or less; topically applying a glycol compound selected from the group consisting of polyethylene glycol, triethylene glycol, glycerol and mixtures thereof to the partially dewatered web in an add-on amount ranging of from about 0.5% to about 20% by weight of said papermaking fibers in said web; and drying the partially dewatered web. Unlike claim 1, claim 13 does not require through-air drying by passing heated air at a temperature of at least about 175°C through the web. However, claim 13 includes the further limitation that the glycol compound be applied to the partially dewatered web in an add-on amount ranging from about 0.5% to about 20% by weight of papermaking fibers in the web.

The disclosure of Vinson et al. is discussed above and does not disclose a concentration of plasticizer added to the web in terms of the weight relative to the weight of the papermaking fibers.

Kohler et al. disclose a process for improving the surface characteristics (e.g., strength, brightness and aging resistance) of a paper or board by applying an aqueous solution (L_w) of a surface-finishing active ingredient (W) to a hydrophilic paper or board sheet. The surface-finishing active ingredient includes

polyethylene glycol (W_1) having an average molecular weight greater than 1500 present in the solution at a concentration of up to 50% by weight, preferably from 0.1 to 20% by weight. The aqueous solution of polyethylene glycol is applied by spraying the aqueous solution onto the surface of the paper or board sheet to be treated in a section of the papermaking process in which the paper or board sheet has a moisture content 40%, corresponding to a fiber consistency of 60% (See page 13, lines 12-15). In all of the Examples, Solutions 1-7 containing polyethylene glycol were applied to dry paper. Preferably, the application rate of the solution is such that the concentration of the polyethylene glycol based on the dry substrate is in the range of from 0.005 g/m^2 to 5 g/m^2.

Contrary to the assertion in the Office action, Kohler et al. fail to teach the addition of polyethylene glycol to a partially dewatered web in an add-on amount ranging from about 0.5% to about 20% by weight of papermaking fibers in the web as required in claim 13. On page 3 of the Office action, the Examiner states that Kohler et al. disclose adding polyethylene glycol in amounts ranging from about 0.3% (referring to Example 2 at page 21 of Kohler et al.) to about 14% (referring to Example 1 at page 19 of Kohler et al.). The 0.3% polyethylene glycol added in Example 2 relied on by the Examiner is based on the weight of fiber material (See page 21, line 8-9), the same basis used in claim 13. However, the upper end of the range of 14% from Example 1 relied on by the Examiner is clearly described as the moistening of the paper as a result of spraying the aqueous solution (Solution I) containing polyethylene glycol **and water** (See page 19, line 18), and not the amount of polyethylene glycol alone. At page 20, line 2, Kohler et al. teach that the moistening of 14% relied on by the Examiner corresponds to an application of polyethylene glycol of **0.2%** by weight based on the fiber material. This correspondence is calculated by multiplying the application rate of Solution I (1.12 g/m^2) by the weight concentration of polyethylene glycol in Solution I (10%) and dividing by the basis weight of the paper (56 g/m^2). Similarly, none of the remaining Examples 3-8 discloses addition of polyethylene glycol in an amount greater than 0.3% by weight based on the fiber material. For example, Example 8 includes polyethylene glycol

addition of 0.15% by weight of fiber material. (See page 25, lines 3-4). Example 9 does not disclose the addition of polyethylene glycol in terms of the fiber material and fails to disclose information sufficient to make such a calculation. Thus, Kohler et al. fail to teach or suggest limitations of claim 13, including topically applying a glycol compound to a partially dewatered web having a fiber consistency of about 80% or less and applying the glycol compound in an add-on amount of from about 0.5% to about 20% by weight of the papermaking fibers in the web.

Given the deficiencies of Vinson et al. with respect to the invention of claim 13, including the requirement of applying a glycol compound to a partially dewatered web having a fiber consistency of about 80% or less, and the above-noted shortcomings of the teaching of Kohler et al., applicants respectfully submit that these references, either singly or when combined, do not teach or suggest each of the limitations recited in claim 13. Furthermore, the asserted justification for combining Vinson et al. with Kohler et al. to "expand the application of polyethylene glycol as a softener in the design of Vinson" misconstrues both references. Vinson et al. do not teach the use of polyethylene glycol as a softener, but as a plasticizer used only in conjunction with a quaternary ammonium softening active ingredient to reduce the melting point and viscosity of the quaternary ammonium ingredient to aid in the synthesis. By contrast Kohler et al. do not teach the use of quaternary ammonium softening agent and instead use polyethylene glycol as a component of a surface-finishing composition. Thus, the disparate uses of polyethylene glycol in these two references would not suggest one skilled in the art to combine their teachings. In view of the above, applicants respectfully submit that a *prima facie* case of obviousness is lacking with respect to claim 13. Claims 14-16 and 24 depend from claim 13 and likewise are submitted as patentable over Vinson et al. in view of Kohler et al.

Claims 4 and 5 depend indirectly from claim 1 and further require that the glycol compound comprising polyethylene glycol having a molecular weight of approximately 600 be topically applied to the partially dewatered web in an add-

on amount of about 0.5 to about 20% by weight of the papermaking fibers in the partially dewatered web, more preferably in an add-on amount of about 1 to about 2% by weight of the papermaking fibers in the partially dewatered web.

The process defined in dependent claims 4 and 5 is distinguished from the disclosure in Vinson et al. for the reasons set forth above with respect to claim 1. Furthermore, as noted above with respect to claim 13, Kohler et al. fail to disclose the range of polyethylene glycol addition recited in claims 4 and 5. Accordingly, applicants respectfully submit that claims 4 and 5 are patentable over Vinson et al. in view of Kohler et al.

Claims 6 and 7

Reconsideration is respectfully requested of the rejection of claims 6 and 7 as being obvious over Vinson et al. in view of U.S. Patent No. 3,779,791 (Ploetz et al.).

Claims 6 and 7 depend indirectly from claim 1 and further require that the temperature of heated air passed through the partially dewatered web during the through-air drying step be from about 190°C to about 210°C or from about 200°C to about 205°C.

Ploetz et al. disclose a method that permits heating of **paper products** consisting predominantly or entirely of cellulose (e.g., paper and paperboard) to temperatures well in excess of 100°C, as during dry sterilization, without the paper product becoming brittle or disintegrating. The method includes impregnating the paper product with from 2% to 25% by weight polyethylene glycol prior to heating.

Applicants respectfully point out that the disclosure of Ploetz et al. is limited solely to heat treatment of existing paper products and that the reference makes absolutely no mention of the temperatures at which partially dewatered webs of papermaking fibers are dried during the initial papermaking process, much less through-air drying temperatures. Accordingly, the acknowledged deficiencies of the disclosure in Vinson et al. with respect to the temperature of

the air passed through the partially dewatered web as recited in claims 6 and 7 cannot be overcome by resort to Ploetz et al.

In view of the above, applicants respectfully submit that claims 6 and 7 are patentable over Vinson et al. in view of Ploetz et al.

Claims 17-21

Reconsideration is respectfully requested of the rejection of claims 17-21 as being obvious over Vinson et al. in view of Kohler et al. and further in view of Ploetz et al.

Claims 17-19 depend indirectly from claim 13 and further require that the partially dewatered web be through-air dried by passing heated air at a temperature of at least about 190°C, from about 190°C to about 210°C or from about 200°C to about 205°C through the web.

The references are discussed above. Kohler et al. do not mention through-air drying. Ploetz et al. disclose nothing regarding drying partially dewatered webs during the papermaking process. Accordingly, the admitted deficiencies in the disclosure of Vinson et al. with respect to claims 17-19 cannot be overcome by resort to the secondary references.

Claims 20 and 21 depend indirectly from claim 13 and are submitted as patentable over the combination of Vinson et al., Kohler et al. and Ploetz et al. for the reasons set forth above with respect to claim 13.

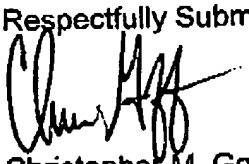
Furthermore, Applicants note that 103(a) rejections based on the same references were made in the Office action dated March 17, 2003. It is respectfully submitted that the Examiner's statement in the Office action dated July 12, 2004 that the 103(a) rejections for claims 4-5, 13-16, 24, 6-7, 17-19 and 20-21 were withdrawn in view of Applicant's comments and a further search led Applicant's to believe that the 103(a) rejections were traversed.

CONCLUSION

Favorable reconsideration and allowance of all pending claims are respectfully solicited.

The Commissioner is requested to charge any fee deficiency in connection with this amendment to Deposit Account No. 19-1345.

Respectfully Submitted,



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